

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/01351

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 F16K5/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F16K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|------------------------------------|
| X | US 3 192 943 A (MOEN ALFRED M) 6 July 1965 (1965-07-06) | 1-22, 24-26, 28-31 |
| Y | column 2, line 38 -column 5, line 52; figures | 23,27 |
| Y | --- | |
| Y | US 5 730 420 A (TOW JOHN P) 24 March 1998 (1998-03-24) | 23 |
| A | column 2, line 35 -column 2, line 43; figures | 17,22 |
| Y | --- | |
| Y | DE 12 02 596 B (WHITEY RESEARCH TOOL CO) 7 October 1965 (1965-10-07) | 27 |
| A | column 2, line 25 -column 3, line 12; figures | 1,3,4, 7-10, 17-21, 24,28 |
| | --- | |
| | -/-- | |

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

° Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

24 April 2003

Date of mailing of the international search report

14/05/2003

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 03/01351

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|----------------------------|
| X | US 3 648 723 A (NELSON DONALD R ET AL) 14 March 1972 (1972-03-14) column 1, line 70 -column 2, line 41; claim 1; figures --- | 1,2, 12-14, 16,29,30 |
| X | US 5 595 206 A (SORIA VEGA SERGIO) 21 January 1997 (1997-01-21) column 2, line 35 -column 5, line 48; figures --- | 17,19, 22,31, 32,34 |
| A | US 4 685 488 A (CORBIN SUSAN E ET AL) 11 August 1987 (1987-08-11) cited in the application figures ----- | 1 |

INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No
PCT/US 03/01351

| Patent document cited in search report | | Publication date | Patent family member(s) | | Publication date |
|---|---|---------------------|----------------------------|------------|---------------------|
| US 3192943 | A | 06-07-1965 | NONE | | |
| US 5730420 | A | 24-03-1998 | NONE | | |
| DE 1202596 | B | 07-10-1965 | NONE | | |
| US 3648723 | A | 14-03-1972 | DE | 2062989 A1 | 24-06-1971 |
| | | | FR | 2073889 A5 | 01-10-1971 |
| | | | GB | 1286615 A | 23-08-1972 |
| US 5595206 | A | 21-01-1997 | NONE | | |
| US 4685488 | A | 11-08-1987 | AT | 56511 T | 15-09-1990 |
| | | | AU | 6797187 A | 13-08-1987 |
| | | | CA | 1271107 A1 | 03-07-1990 |
| | | | CN | 87100623 A | 19-08-1987 |
| | | | DE | 3764813 D1 | 18-10-1990 |
| | | | DK | 61787 A | 08-08-1987 |
| | | | EP | 0233060 A2 | 19-08-1987 |
| | | | HK | 133693 A | 10-12-1993 |
| | | | IE | 870313 L | 07-08-1987 |
| | | | JP | 62266275 A | 19-11-1987 |
| | | | NO | 870424 A | 10-08-1987 |
| | | | ZA | 8700565 A | 30-09-1987 |

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

MCKNIGHT, Douglas B.
CALFEE, HALTER & GRISWOLD LLP
800 Superior Avenue
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Cleveland, Ohio 44114
ETATS-UNIS D'AMERIQUE

PCT

WRITTEN OPINION (PCT Rule 66)

| | |
|---|---|
| Date of mailing (day/month/year) 15.10.2003 | |
| Applicant's or agent's file reference 22188/06609 | REPLY DUE within 3 month(s) from the above date of mailing |
| International application No. PCT/US03/01351 | International filing date (day/month/year) 17.01.2003 |
| Priority date (day/month/year) 18.01.2002 | |
| International Patent Classification (IPC) or both national classification and IPC F16K5/06 | |
| Applicant SWAGELOK COMPANY et al. | |

1. This written opinion is the **first** drawn up by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application
3. The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
For an informal communication with the examiner, see Rule 66.6.


If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 18.05.2004

| Case Number | Ctry | Sub Case | Action Due | Due Date |
|-------------|------|----------|----------------|-------------|
| 2218806609 | WO | | CH II RESPONSE | 15-Jan-2004 |

RECEIVED

Action Type: **OPN**

Not a mailing address of the international preliminary examining authority:

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11-21-07

T.L.B. IP. Dept.

I. Basis of the opinion

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*):

Description, Pages

1-13 as originally filed

Claims, Numbers

1-34 as originally filed

Drawings, Sheets

1/6-6/6 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this opinion.)

6. Additional observations, if necessary:

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

| | | |
|-------------------------------|--------|--------------------|
| Novelty (N) | Claims | 1,9,11-14,29-32,34 |
| Inventive step (IS) | Claims | 1-32,34 |
| Industrial applicability (IA) | Claims | |

2. Citations and explanations**see separate sheet**

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:

D1: US-A-3 192 943 (MOEN ALFRED M) 6 July 1965 (1965-07-06)
D2: US-A-5 595 206 (SORIA VEGA SERGIO) 21 January 1997 (1997-01-21)
D3: US-A-5 730 420 (TOW JOHN P) 24 March 1998 (1998-03-24)
D4: DE 12 02 596 B (WHITEY RESEARCH TOOL CO) 7 October 1965 (1965-10-07)

2. The present application does not meet the requirements of Article 33(1) PCT, because the subject-matter of claims 1, 9, 11-14, 29-32 and 34 is not novel in the sense of Article 33(2) PCT.

- 2.1 With reference to independent claim 1:

D1 discloses (cf. figure 4 and description, column 4, lines 27-37) a valve comprising a valve body (10) having a valve cavity (17) therein; a valve element (31) for controlling flow through the valve based on rotational position of the valve element about an axis; and a single piece packing (27) that surrounds the valve element and seals the valve element within the valve cavity; the single piece packing being dimensioned to be installed on the valve element within a room temperature range (since no temperature is mentioned in D1, it is implicit that the assembly is done within room temperature).

- 2.2 With reference to dependent claim 9:

D1 discloses (cf. description, column 3, line 8) a valve wherein the packing comprises a polymer (Neoprene).

- 2.3 With reference to dependent claim 11:

D1 discloses (cf. fig. 19) a valve wherein the valve element comprises a non-spherical flow control element.

2.4 With reference to dependent claims 12 and 13:

D1 discloses a valve comprises all the features of claims 12 and 13.

2.5 With reference to independent claim 14:

D1 discloses (cf. figure 4 and description, column 4, lines 27-37) a method for assembling a valve comprising the steps of forming a one piece packing (21) adapted to seal a valve element (31) within a valve cavity; and installing the packing onto the valve element within a temperature range for which mechanical properties of the packing are unchanged.

2.6 With reference to independent claim 29:

D1 discloses (cf. figure 4 and description, column 4, lines 27-37) a combination of a valve element (31) and a single piece packing (21) therefore, wherein the packing is installed onto the valve element at room temperature (since no temperature is mentioned in D1, it is implicit that the assembly is done within room temperature).

2.7 With reference to dependent claim 30:

D1 discloses (cf. figure 4 and description, column 4, lines 27-37) a combination wherein the valve element comprises a ball (33) and stem (32) and with at least one trunnion (34) adjacent the ball.

2.8 With reference to independent claim 31:

D1 discloses (cf. figure 4 and description, column 4, lines 27-37) a valve comprising a valve body (10) having a valve cavity (17) therein; a valve element (31) for controlling flow through the valve based on rotational position of the valve element about an axis; and a packing (21) that surrounds the valve element and seals the valve element within the valve cavity; the valve element comprising a ball (33) and adjacent upper (32) and lower (34) trunnions; the ball having an outer diameter D1 and at least one of the trunnions having an outer diameter D3 : wherein the valve element has a ratio D3/D1 that facilitates assembly of the

packing onto the valve element at room temperature.

2.9 With reference to independent claim 32:

D2 discloses (cf. fig. 1) a valve (10) comprising a valve body (12) having a valve cavity 14) therein; a valve element (20) for controlling flow through the valve based on rotational position of the valve element about an axis; and a packing (26) that surrounds the valve element and seals the valve element within the valve cavity; the valve element comprising a ball and adjacent upper (24) and lower (31) trunnions; the valve cavity being dimensioned to closely receive the valve element while permitting the valve element to axially shift to compensate for temperature effects on the packing.

2.10 With reference to claim 34:

D2 discloses (cf. fig. 1 and description, column 5, paragraph 5) a valve (10) wherein the packing is live loaded.

3. The present application does not meet the requirements of Article 33(1) PCT, because the subject-matter of claims 2-8, 10 and 15-28 does not involve an inventive step in the sense of Article 33(3) PCT.

3.1 With reference to dependent claim 2-8 and 10:

Claims 2 refers to a standard range of room temperature. Claims 3-8 refer to simple dimensional ratios that would be easily chosen by the skilled person without the exercise of inventive skill in order to facilitate the assembly of the packing on the valve member or to reduce packing material volume. Claim 10 refers to the use of obvious materials.

3.2 With reference to dependent claims 15 and 16:

Claims 15 and 16 refer to an obvious process method (claim 15) and a standard room temperature (claim 16).

3.3 With reference to independent claim 17:

- 3.3.1 Document D1, which is considered to represent the most relevant state of the art, discloses a valve from which the subject-matter of claim 17 differs in that the ratio $D3/D1$ is explicitly about 0.7 to about 0.9.
- 3.3.2 The problem to be solved by the present invention may therefore be regarded as facilitating the assembly of the packing onto the valve member.
- 3.3.3 The solution proposed in claim 17 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) because the skilled person would obviously increase substantially the ratio $D3/D1$, without the exercise of inventive skill, in order to solve the problem posed.

3.4 With reference to dependent claims 18-23:

Claims 18-21 refer to obvious features. The features of claim 22 are known from D1. The features of claim 23 are known from D3.

3.5 With reference to independent claim 24:

- 3.5.1 Document D1, which is considered to represent the most relevant state of the art, discloses a valve from which the subject-matter of claim 24 differs in that the ratio $H/D4$ is explicitly about 0.75 to about 0.85.
- 3.5.2 The problem to be solved by the present invention may therefore be regarded as reducing the packing volume.
- 3.5.3 The solution proposed in claim 24 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) because the skilled person would obviously decrease substantially the ratio $H/D4$, without the exercise of inventive skill, in order to solve the problem posed.

3.6 With reference to dependent claims 25-28:

Claims 25 and 28 refer to obvious features. The features of claim 26 are known from D1. The features of claim 27 are known from D4.